

Appl. No. 10/817,354  
Response dated 27<sup>th</sup> September 2005  
Communication in reply to action dated 08-July-05

**Amendment to the ABSTRACT:**

**Please replace the ABSTRACT paragraph with the following [deletions noted] to meet requested 150-word length:**

An electrical resistive device ~~for sensing hydrogen gas~~, including: an array of titania nanotubes open at an outwardly-directed end formed by anodizing at least a portion of a titanium layer; a plurality of palladium (or other noble metal) clusters having been deposited atop the nanotube array; and the nanotube array mechanically supported by an integral support member. The array of titania nanotubes may include a dopant ~~in an amount less than 1% by mass~~. An exposure of ~~[[the]]~~ titania nanotube array to radiant energy emitted within a range of frequencies from visible to ultraviolet, in the presence of oxygen, removes ~~at least a portion of~~ a contaminant, if present ~~on the titania nanotubes~~. The titanium layer may be deposited atop the integral support; or the unique doped titanium layer can be produced, prior to the anodizing thereof, by depositing titanium along with dopant atop the integral support member by a co-deposition process. ~~The titanium layer may be a titanium foil or doped titanium foil. The device, as adapted for use to remove a contaminant (such as liquid crude petroleum, pathogens, e.g., virus, bacteria, fungi, and proteins) from the array of nanotubes, will do so photocatalytically by exposure thereof to radiant energy emitted within a range of frequencies from visible to ultraviolet, in the presence of oxygen.~~ Also, supported ~~[[is]]~~: method(s) of producing the electrical resistive devices ~~for sensing hydrogen gas~~.